# Pacific Discovery

GREEN TURTLE—STEINHART AQUARIUM

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IN THIS ISSUE: *Donald A. Simpson*
*Ralph E. Smith* • *M. W. F. Tweedie*
*Borys Malkin*

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# THE CALIFORNIA ACADEMY OF SCIENCES

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**Founded in 1853**

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## In This Issue



### Pre-Discovery

With a New Year and a new volume of *Pacific Discovery* about to begin, this and all other departments of the Academy are, as they should be, looking ahead. The year passing saw ground broken for major new building, the construction of the Academy's new Hall of Science and the Morrison Planetarium. The concrete dome of the latter now fills the view from the editor's window. That and the sounds of men and machines are persistent reminders of a story to be told. In the first two years of this bi-monthly we have carried out to the best of our contributors' ability and our own the original plan of a general magazine of the natural sciences and conservation, with emphasis on the Pacific area—and this plan we shall enlarge and continue. *PD* was never conceived to be merely a "house organ" for the Academy. Its purpose is greater. Thus institutional announcements, personalities, staff changes, and such will be kept as before to the monthly *Academy News Letter*, which is mailed regularly to all members and exchanges.

But there is an Academy story to be told, most appropriately, in *Pacific Discovery*. It is the inside story of one of the biggest jobs the Academy staff has ever taken on. Four times in its history the Academy has had a new building to fill—in 1891 on Market Street; in 1916 when the earthquake-shattered Academy reopened to the public in the new North American Hall in Golden Gate Park; in 1923 when the Steinhart Aquarium was completed; in 1934, with Simson African Hall. Those were all big jobs, to be sure; but what faces us now is the biggest yet, the most costly, the most demanding of all our skill. The "job" has many separate parts, and each will make a great behind-the-scenes story in *Pacific Discovery*.

There will be several more of the African habitat groups of large mammals; we'll describe in detail how one of the big dioramas is built, from the hunting expedition to final installation in the African Hall addition. There will be the Lovell White Hall of Man and Nature, with an entirely new kind of exhibit for this museum, and several other major projects. Our biggest story, one which will be important in the history of American science, will be the story of a new kind of planetarium projector, the one being designed and built in our own instrument shop.

To get in a word about next issue: Woody Williams and Karl Kenyon will sail the *Seven Seas* into our pages again, and Ira Wiggins will take us "Beyond Cayambe" in the Andes. There will be an important Conservation feature.

### Discovering PD's Authors

**Donald A. Simpson** put special emphasis on the last word when he declared that "Bringing Them Back Alive Can Be Killing!" The man who, as Collector for the Steinhart Aquarium, has brought them back alive from all over should know. As you might expect, the Simpsons keep fish at home, too, and Don is author of *Small Marine Aquaria for the Home*.

California agriculture owes a great deal to the author of "Las Nueces y Bolbones." **Ralph E. Smith,** Emeritus Professor of Plant Pathology in the University of California, had a leading part in defeating the disease enemies of pear, asparagus, walnut, and other chief crops of the state. But of the many plants that have enriched both nature and man in this horticultural paradise, none has been closer to his heart, for at least four decades, than the California black walnut. To that noble tree as well as in part to Dr. Smith the walnut industry of California owes its existence.

Steinhart Aquarium biologist Maury Rakowicz was instrumental in getting for us the charming photographs and accompanying note of the brief "Back-to-front Butterflies." Knocking around the Far East for tropical fish, after World War II, Maury spent some time about Singapore and became acquainted with the famous Raffles Museum and Library and its Director, **M. W. F. Tweedie,** M.A., C.M.Z.S.

"Clouds Over Cameroon" is not the last of Research Associate **Borys Malkin**'s African reports we'll publish, even though its peripatetic author is now in England for Christmas and will soon embark for the United States. D.G.K.

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# According to Their Inclinations

NOT ALL THE ARGONAUTS OF 1849 were gold rush addicts. Not all who made the arduous voyage around the Horn, who crossed the Isthmus, or who trekked over the Great American Desert had come to California to dig along creek banks and find fortunes in placer claims. Nor were those who sought opportunities of a different kind in this new place one whit less adventuresome. There was gold of a different kind, and plenty of it, in California besides that saved in the riffles of a long Tom. Fortunately for our times, there were Forty-niners who in their own day knew this.

The urge for adventure and conquest wells in men's breasts perhaps stronger in times of war. The Mexican War gave America, with its young arrogance, reason to look to further-flung boundaries. Vastly increased emigration from Europe, the fetters of staid tradition in the East, and the strenuous times of the 1840's, very likely were all contributing reasons for the feverish excitement that followed the Sutter's Mill discovery. Historians have said that the five hundred millions in gold produced during the seven years after the rush cost three times that amount to dig. Of more importance, however, the wilderness that was California was settled with energetic, determined men.

These new citizens, eighty thousand of them in 1849, began at once to build towns and to surround themselves with the indispensables of civilization that had been put behind when they shouted Ho for California! For their children, suddenly underfoot, schools were erected. The Missions were no longer sole representatives of religion. Methodist, Congregational, Episcopal, and Presbyterian spires pointed to Heaven. Learned men, and there were many among the pioneers, sought each other's companionship for intellectual stimulus and satisfaction. Seven of these stalwarts, numbering five doctors, a young real estate broker, and the father of San Francisco's common schools, founded on April 4, 1853 the California Academy of Sciences.

Here was an unusual institution made up of local citizens but nevertheless men of considerable stature in science. They met together regularly and frequently for discussion in an era when the natural sciences grew remarkably. The Academy quickly became a gathering place for people all up and down the Coast who were interested in science. A member from Puget Sound is conspicuous in the annals of 1854. These giants in the West included such men as George Davidson, famed for his *Coast Pilot* (called by sailors, "Davidson's Bible"), J. D. Whitney, the mining geologist, and Theodore Hittell, historian and journalist. The occasions were many and stimulating when the California Academy of Sciences met with visiting explorers, scientists, adventurers, and voyageurs such as Louis Agassiz, John Torrey, Asa Gray, Captain de Long of the *Jeanette* polar expedition, and Lieutenant Schwatka, on his return from Alaska.

From such sturdy beginnings and solid foundations the Academy has grown with state and nation. A scientific staff of forty, engaged in original research, today keeps the Academy well to the front in furthering man's knowledge of his world. There are notable collections of specimens in the several fields of the natural sciences. These collections, continually enlarged, strengthened, and developed, are comparable to filing systems and lending libraries of materials for research. They are maintained for use of scientists all over the world. The shipping log of insect, bird, and botany specimens for one day in December includes Egypt, China, Argentina, Sweden, France, Germany, Switzerland, Great Britain, and Russia. The Academy library of 100,000 volumes and 60,000 maps is notable in the region. The first "Cabinet of Specimens" that stood at one end of the Academy's meeting room of the 1850's has grown to a museum housed in four buildings and operated free of charge for public education in the natural sciences.

The membership roll of the California Academy of Sciences is still star-studded with eminent scientists of the day. In addition, there are many whose interest is secondary to their principal pursuits, those who make science a matter of pride in learning. There are those who have a healthy curiosity for the world of nature and find it well served through membership. With these enlarged functions and a new place in the times, the Academy needs the stimulus of an even greater membership. There is room on the roster for scientists, for those with natural science as a hobby, and for men and women who have a pride in helping maintain civic institutions.

# BRINGING THEM BACK ALIVE CAN BE Killing!

**Donald A. Simpson**

IT WAS COLD AND WET AND MISERABLE that mid-December when the Curator of the Steinhart Aquarium called me into his office. The war was over but we had not reëstablished our contacts for tropical Pacific fishes. The Curator wanted to know if I thought I could get a load of fish in Mexico by going down in the Aquarium truck.

One look at the pelting rain driving against the windows, weighed off with memories of Guaymas in the warm winter sun, was enough to make me toss caution to the winds. I sat straight up in my chair and tried not to look too eager. Helen and I had collected at Guaymas many times, but it had always been on vacations via train or plane—we had never considered driving. I considered it then, quickly, but I am afraid I let my judgment be colored by my desires.

Would I go, the Curator wanted to know?

Would a child like a box of candy?

December 21 saw us on our way. The old Dodge collecting truck (which had seen the best of its 100,000 miles) creaked and groaned under its load of jugs, cans, and collecting gear. Our spirits were high and our hearts were light as we pounded down the highway, the cold December wind just whetting our appetites for the warmth we knew was waiting for us. If we'd had just an inkling of what *was* waiting for us in the days ahead, we would have turned around and scuttled back in a hurry. But the afternoon of the 23rd found us at the border, Nogales, Arizona, still happy.

Then the fun began.

We thought we'd sail right over and breeze through to Hermosillo, where we would put up for the night. It was only about 200 miles away. But . . .


There were a few little matters we had overlooked.

There were tourist cards to procure. There were dollars to exchange for *pesos*. There was the little matter of going through Mexican customs. Last, but by no means least, there was the truck permit. You'd think a half hour would clean everything up nicely. But we found out we were doing it the Mexican way. With lots of carbon copies and rubber stamps. And all the time in the world to do it.

Do not misunderstand me: I am not trying to disparage the Mexican way. It has, I am sure, much merit. One has but to observe the tranquillity of expression on the average Mexican face to be convinced that it has many advantages. Speed, however, is not one of them.

We were cleared in due time, Mexican standard, and on the road again—in the late forenoon next day.

Winding our way through the rutted streets of Nogales, Sonora, we came to the start of the highway. We were told they were making a new superhighway — American style — from the border to Hermosillo. We were told the road was pretty good all the way down. We thought so too, as we sped over the nice new asphaltum. That is, for the first 25 miles we did.

Then without warning it stopped.

The old Dodge bucked and bounced, jolted and swayed, as we slowed it down to 15 mph. The roadbed had been built up but it was not surfaced, unless you could call loose gravel, rocks, and sand surfaced—together with some of the fanciest washboard crisscrossed with ruts it has ever been my misfortune to experience .

From a bad start it got steadily worse.

After some time, when we had become more or less immune to bouncing and banging around, came the detours. *Desvisacion,* the Mexicans called one of these, when they thought to put up a sign.

When we came down out of the hills the country changed. Every few miles, sometimes less,

there was an *arroyo seco* – dry wash, in plain American: the dried up bed of a small river or creek that was probably a racing torrent in the rainy season. In due course there was to be a bridge over each arroyo. But not now. Later. Build the road now; stick the bridges in later. Different departments, evidently. So for now, the road would just stop when it came to the bank of one–abruptly.

The system was simple: generally a couple of small stones were placed in the middle of the road right on the brink of the dry wash; once in a while there was a small sign: DESVISACION. Neither one meant much. The sign was too small to see until you were on top of it and the rocks were not much larger than ones you'd been bouncing over all the way. The only saving factor was that you could not travel at a great speed anyway. A quick application of the brakes usually stopped the truck, front wheels teetering on the brink.

The procedure soon became routine: stop, make sure all four wheels are on something solid, catch your breath, wipe your brow, back up, and look the situation over.

Each detour is a problem in itself. (When I say "detour" do not think of those wonderful things by the same name you find on our highways under repair; *these* were in a class by themselves.) To begin with, this highway is built up. All the way along it is 10 to 40 feet above the surrounding desert–that is, until you come to a dry wash. There it stops and it's every man for himself. You slide down over the side, generally at a steep angle.

If you reach bottom right side up you get out and walk across the dry river bed, looking for the tracks of some pioneer who has gone before you. You try to figure a route that will get you safely across. Realizing with a start that it *is* a river bed, however dry now, you wonder what it is like in the rainy season. . .

Your survey completed, you get back into the truck and, praying, start the motor. You use all the gears you have, particularly thankful for compound low, and plunge across. On the other side you make the customary sideways assault on the highway embankment, once more, still praying you can keep the truck on all fours. You make it and offer up thanks.

Then there is the dust. Remember?–no rain. The road is covered with a fine powder: gray, yellow, red, depending upon which material had been used for the roadbed. It floats up around you in great clouds, is sucked into the truck, inhaled and swallowed. It gets into your eyes, ears, and clothing. You even begin to wish for a little rain–not much, just enough to settle the dust a bit.

For *that* wish you get well punished–later. Now you just concentrate on fighting the road, the dust, the *desvisaciones*. If getting there is victory, then you have won. But we felt more frazzled than victorious when we rolled at last into Hermosillo in the dark and uncorked our weary frames from the cab.

The load, packed so carefully, had shifted all over and two inches of fine powdery dust covered everything. Moreover, it was Christmas Eve, which in Mexico sounds like Fourth of July, Armistice Day, and several of our noisier celebrations all rolled into one. With firecrackers, bells, gongs, whistles, and general small arms fire, plus the exuberance of those who'd fought a losing battle with the *tequilla* jug. All in all, it was not exactly soothing, but we were too tired to appreciate the full effect; we fell asleep in the middle of it.

Six A.M. found us on our way again. The remaining 80 miles were no worse (but no better) than those of the day before.

THE LATE AFTERNOON of Christmas Day we reached our destination, Bocochiabampo Bay, which is several miles westward over a neck of land from the town and harbor of Guaymas. The harbor of Guaymas has been compared to that of Rio de Janeiro, and this comparison has some slight merit, especially if made from the air; but up close, from the town with its dust and mangy dogs, its dilapidated buildings and–over all–the constant odor of the shrimp canneries (Guaymas is the Gulf's chief shrimp port), it leaves something to be desired. Although highly touted in the travel brochures, Guaymas is, we suspect, about like any other Mexican seaport town of comparable size. For ourselves, we can take it or leave it alone. This time we left it alone as we took the road out to Miramar Beach.

As we rounded the last curve and saw the Gulf ahead of us we paused a moment to drink in the view. Here is the bet that the travel boys overlooked. Here is the spot they could *not* have exaggerated. Here is the place that makes your eyeballs ache with looking. Miramar Beach is a curving crescent of white sand looking out to the dazzling blue of Bocochiabampo Bay, with sev-



*In the Steinhart Aquarium garage, Helen and Don Simpson survey their collecting gear and dream of a sunny Christmas in Guaymas. (Daniel P. Mannix)*

eral small guano-covered islands standing like aged, white haired watchmen where the bay expands into the Gulf itself. Rugged mountains, their slopes dotted with organ cactus, rear up in an angry half-circle landward. Over all the sun shines down from a dazzling Mexican sky. From here, too, the sunsets will take your breath away, sunsets you will have to travel to the Indian Ocean to equal—that I know, for I have seen them both.

But we came here to work. Reluctantly we tore our eyes away from the view and headed for the hotel on Miramar Beach. After chipping and scraping a few pounds of Mexican countryside off our hides and wolfing a quick breakfast we made for the inlet, about three miles away.

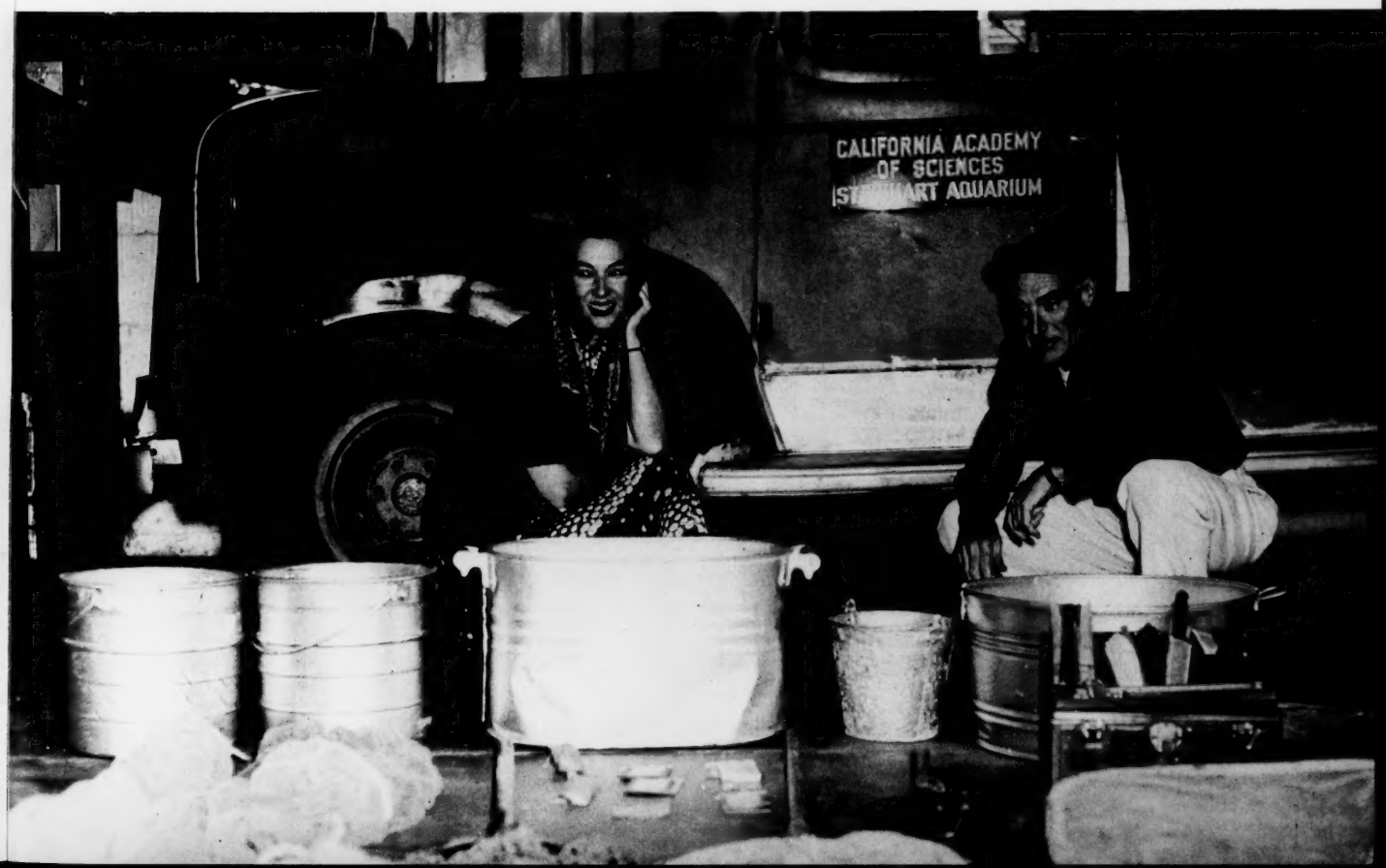
This inlet, connecting Bocochiabampo Bay with a shallow lagoon, winds around a rocky peninsula on the bay side, and spreads out a bit before it reaches the lagoon. On one side is a shallow sandy beach, on the other a channel, bordered with rocks and boulders covered with profuse marine growth. The entire area is a collector's Paradise. Here, by seine and dipnet, you can catch more species of fish than you can shake a net handle at. Here will be found the sort of stuff you dream about when sitting, perforce, at home: the beautiful seahorse, *Hippocampus ingens,* ranging in color from golden yellow to brick red, the little angler fish *(Antennarius),* sometimes coal black, sometimes the brilliant orange of the California poppy – and many others too numerous to mention.

A mile or so in the other direction is the breakwater, behind which the sportfishing boats are moored. Here amongst the rocks are other species: the little dazzling blue damsel fishes (pomocentrids), the scarlet cardinal fishes, striped convict fishes, puffers, and trigger fish, to name a few.

These small fishes from these two localities were the ones we were after, for we could not transport large specimens over the long road home. These, moreover, were the bright colored little specimens we wanted to replace all those not yet obtainable from the South Pacific since the war. We worked hard for them.

On the far side of the inlet we waded waist deep, scraping the submerged boulders with long-handled dipnets and bringing up netfuls of the marine growth covering them. This was what we wanted; with the growth came many specimens. This was the spot where the seahorses and the little angler fishes were found. And here we caught snappers and blennies and even several species which proved new to science.

From the shallow sandy beach on the other side of the inlet we seined many of the small schooling fishes: mullet, mojarra, small shad, and an abundance of others—too many, in fact, for our limited



stock of containers. Leftovers we threw unceremoniously into the pickle jars for the Academy's department of fishes. It was among these collection specimens that the species new to science turned up to delight the curator of that depart-

Out beyond the inlet, in the bay itself, were many small rocks. Lifting these produced still other kinds: young spotted snake eels, little morays, colorful gobies, and an occasional small octopus.

At high tide we fished off the breakwater with trap and dipnet, even with hook and line, using the tiniest hooks obtainable, our catch being entirely different from that at the inlet. What impressed us, as always, was the strict "zoning" of these inshore inhabitants; each species or small group of closely related kinds has its own special niche where it is "at home." Knowing where things live is half the game of collecting—in any field.

These two spots comprise our main collecting grounds at Guaymas and give us a quantity and variety of species more than sufficient for our needs. Here, in the week between Christmas and New Year's Day, we filled our jugs and cans with live specimens. To do it in a week meant devoting every waking minute to collecting, working the inlet at low tide, the breakwater at high.

NORMALLY AT THIS SEASON of the year in Guaymas the weather is ideal: cool nights and warm sunny days. So we'd always found it in previous years. But *this* year – what did we find? It was cloudy the day we arrived. Next day it rained. The day after that it poured. And for the rest of the week it came down with but few interruptions. It was cold, too, for Guaymas—or for any other place. Log fires burned continuously in the fireplaces, filling the air with the pungent smell of burning ironwood. Warmth and sun of Mexico! The joke was on us, for at the same time at home, we heard, it was sunny and warm.

But we collected anyway—no time to wait for it to clear up; it looked, in fact, as if it never intended to clear up. We collected in the rain, with bathing trunks topped by sweaters and raincoats. Fun? What's *your* point of view?

*The lovely curve of Miramar Beach rims Bocochiabampo Bay. (Tommy Lark, Guaymas)*

January 2nd the skies cleared a bit. We had our load and wanted to get on our way. Advice about the road north was discouraging. Few if any cars had made it in the last few days, they told us. Better wait until the road dried up. But when would that be? Nobody knew. We looked at the sky and saw a feeble sun struggling to get through the clouds. We decided to make a stab at it. Hastily we loaded up, paid our bill, and headed north.

Much to our surprise we made the 80 miles to Hermosillo without incident, arriving there shortly after noon. The road had been wet in spots, drying out in others; shallow water flowed in the dry washes, but we made it through in good shape. In Hermosillo we were again advised against going farther, but the sun was out—then—and we decided to shove off and try for the border by nightfall.

We kept our fingers crossed for the next 50 kilometers and hoped for the best. The road was mushy and the old Dodge swayed a bit from side to side but underneath the foundation seemed firm and we kept going.

Then the sun quit. Dark clouds rolled ominously overhead. It sprinkled, then poured. If we turned back now we'd surely lose the fish we had worked so hard to get. We kept on, slewing from side to side, mostly in second gear, fighting for every yard.

About two in the afternoon we hit our first detour—a "dry" wash that looked like the Sacramento on a rampage. We hit it in low and crawled across with running boards awash. The next three or four were about the same and we started to congratulate ourselves and the old Dodge, which we decided was better than an amphibious tank.

Another "dry" wash. We made it through and started up the other side. Halfway up we began losing ground, sliding nearer and nearer the edge of a nice drop. We stopped, our left rear wheel bedded down in gummy mud. Shovel work, gunny sacks, and rocks fixed that one, and we gradually eased over the top.

The rain stopped and we felt better. We made the next four or five detours by the rock and sack method. And then we hit one where it wouldn't work. No place on one side to put rocks—the left rear wheel hung over the edge of the bank. This time we were stuck, but good.

A good look confirmed that this was the stock situation you read about in travel literature. We could do nothing until help came. But when would it come, and how? We were miles out in the desert, the nearest town 50 kilometers away, no traffic—nothing in sight but dripping cactus. Night was falling and it was getting cold (it is always thus in such situations). We were doubtful of spending the night in the truck for we were not sure the ground, already loosened by rain, would not give way and drop the truck over the bank. The fish? A hasty check of temperature in the jugs convinced us they would be a total loss by morning. The outlook was decidedly gloomy on all counts.

*Inside the Steinhart Aquarium collecting truck, the author anxiously checks the condition of a tankful of fish. All the way from the subtropical waters of the Gulf of California to San Francisco, they had to be kept as nearly as possible at the temperature of their native waters. (Daniel P. Mannix)*

It was getting colder by the minute. After a short walk to warm ourselves, we decided to take a chance and spend the night in the truck. We had been huddled down for about an hour, trying vainly to bring some warmth to our numb and sodden feet, when a faint glare showed far back on the road behind us. After what seemed like hours, it proved to be headlights; we got out to wait. It was an Arizona-bound pickup truck with three men from Tucson who had been hunting. Our hopes soared as they got out and looked at our predicament. And that was all they did—except to shake their heads, climb back into their cab, and drive on!

After an hour or so, when we were feeling about as low as it is possible to feel, headlights once again showed behind us. When it stopped, it proved to be an old army four-wheel-drive truck; behind the steering-post was a Mexican who looked, at first sight, about as decrepit as his vehicle. But he got down, greeted us cordially, smiled, and said he'd have us out *muy pronto*. We looked at *his* truck and doubted it. We were wrong.

Pancho (this was as close as I could come to his name) drove his truck carefully by, turned around, and came down the grade facing us. Throwing a cable around our front bumper, he backed up the grade and whipped us out in nothing flat. Good old Pancho!

Not only that. "Worse ahead," he told us, but never fear, he'd stay with us right to the border. And he did, snaking us out of hopeless situations no less than six times! At last—almost worn to a nub—we reached the paved section of the highway; it was 25 miles more to the border, but paved! Or was it? We could not see it as everything was coated with an unsullied layer of crisp snow. Alone, I doubt we could have made it, but Pancho, ahead, seemed to have an uncanny instinct for hitting it right in the middle. All we had to do was follow his tracks.

We made the border at 3 A.M. and said goodbye to Pancho. We gave him our thanks and practically all the *pesos* we had left, which he accepted with reluctance. It was nothing, he insisted, nothing at all. We had other ideas: but for Pancho we'd be there yet. He should at least have a medal from the good-neighbor commission, if there is such a thing. And somewhere along the way we found out—we never met them—Mrs. Pancho and six *muchachos* were also in that truck.

AT THE INTERNATIONAL GATE it was so cold the customs officers did not even come out of their shack to look us over. They just waved us on. We were back in the U.S.A.!

A quick check of the fish showed they were all still alive, but temperatures were dangerously low. If we could plug in our Wessix heater for an hour or so, we figured, we might save them. At an all-night garage down a Nogales alley, we explained our needs to a very helpful night attendant. We plugged in the heater, closed the truck tight, and judged that a few hours of it would warm up our tanks—if we were not already too late.

After a two-hour catnap in the local hotel lobby we went back to find the fish all alive at 70°F. and looking happy. This boosted our morale—battered as it was by the past twenty hours—so much that we gassed up and shoved right off. Those blessed paved roads! All that day we kept going and hit Yuma by nightfall with no more trouble than a blowout near Gila Bend that came within inches of toppling us over, and a blown fuse that made us drive the last 30 miles with a flashlight. Luck stayed with us long enough to get the last vacant room in all Yuma. Again the heater pulled the fish through a cold night.

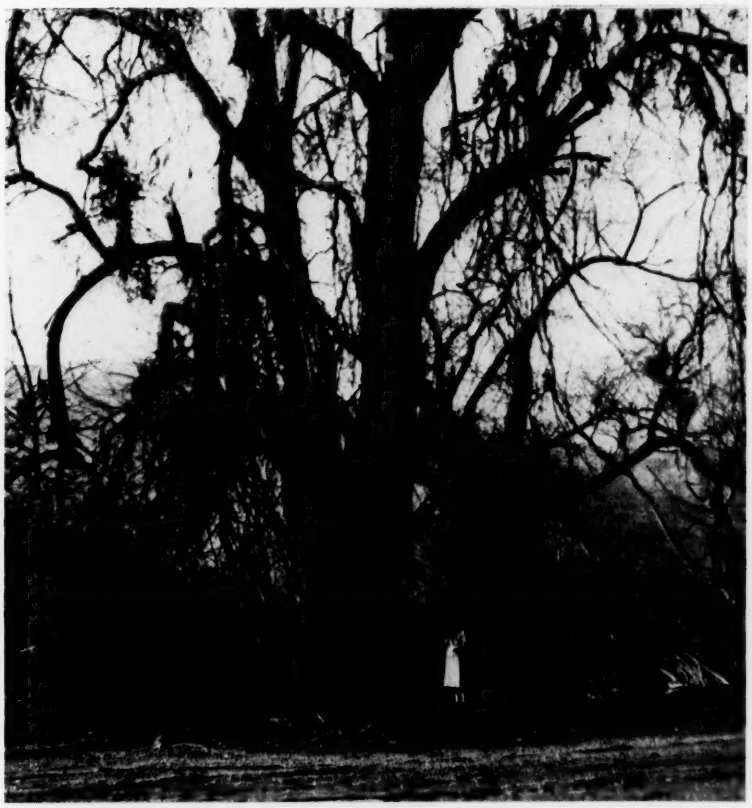
At the aquarium of Scripps Institute of Oceanography, La Jolla, next afternoon, however, our joy at getting back to California took a quick setback when we looked at our fish—it had been a very cold day. Half were floating belly up, some looked dead, and the temperature was much too low. Were we to lose them on the last leg of a hard trip home?

I decided to make one final stab at saving them by resorting to drastic measures. We half-emptied all containers; then we slowly filled them with new, warmer water from the Scripps supply. This process we kept repeating until we had the temperature up to normal level. To our surprise and gratification, most of our specimens responded immediately. None had died and only a few were not swimming about in normal manner. It began to look as if things were finally breaking our way.

Two more days of nursing at Scripps brought every fish to apparent good health. Only one, a tiny puffer, did not survive the two-day drive back to the Steinhart Aquarium in San Francisco. All the rest were in fine shape when we pulled in and rushed them to the tropical room. A stethescope wouldn't have shown half as much life in us.

RALPH E. SMITH

# 'Las Nueces y Bolbones'



*Long before the events occurred which we now celebrate as California's centennial, there had lived in Contra Costa County and certain other places in Central California two races of aborigines, one composed of trees, the other of human beings. The origin of each was obscure but these native Californians had probably lived their primitive existence there for centuries, as remote from what in other parts of the world was called civilization as the residents of another planet. Then came the white man. The profound and very different effects upon these native inhabitants which followed are related here. (Credit is due to Miss Kathleen Bosworth for much assistance in this work.)*

*California black walnuts near Burton Station, Contra Costa County.*

When the Spanish explored California after their arrival from Mexico in 1769, they were greatly interested in the many new kinds of plants, trees, animals, and human beings which they found here. The work entitled *A Historical, Political, and Natural Description of California,* written by Pedro Fages in 1775 and translated by Professor H. J. Priestley, furnishes a good illustration of this and records many of the naïve names that were applied by the Spanish soldiers and priests to places or objects catching their attention and which are still in use in California. It is unfortunate that their "Oso Flaco," "Indio Muerto," "Palo Alto," "Canada del Osito," "Pueblo del Cojo," and "Arroyo Seco," have lost their significance to most of our present inhabitants.

In 1834, Doña Juana Sanchez de Pacheco received from Governor Jose Figueroa a grant to a tract of land lying about what is now the city of Walnut Creek in Contra Costa County, in the region of the San Ramon and Ygnacio valleys, and designated it by the name of Rancho Arroyo de las Nueces y Bolbones. This name is still to be found on old maps and in titles to real estate, but it is known today to comparatively few people and its meaning to even fewer. A Spanish dictionary yields the information that *nueces* (sing. *nuez)* means walnuts, but the word *bolbones* has not been found by us in any dictionary. This matter was made the subject of considerable investigation a number of years ago and reported in 1912 in *Bulletin 231* of the University of California Ag-

ricultural Experiment Station. This bulletin states: "Inquiry shows that there was one locality in this region [Contra Costa County] where black walnut trees were growing when the first white people arrived in the country," and "the name 'Bolbones' appears to be at present quite obscure, but it probably refers to some other kind of tree which grew in that vicinity." Considerable search, however, since *Bulletin 231* was issued has failed to find any Spanish tree name of this sort.

The correct explanation of this name has now been found. In his book, *John Marsh, Pioneer,* Lyman states that Marsh's rancho on the east base of Mt. Diablo which he took up in 1838, "was well-irrigated and was traversed by a stream, the Arroyo de los Pablodons,* 'River of the Villages,' derived from the thriving settlements of the Bolgones Indians that once dotted its banks." And again, "Marsh found a tribe of Indians, the Bolgones, in the Arroyo when he bought the rancho. They had been there from time immemorial."

Purcell's *History of Contra Costa County* states that the land granted to Señora Pacheco extended "between the Arroyo de las Nueces and the Sierra de los Bolgones," that Mount Diablo was formerly called "Sierra de los Golgones," and that "the creek that gave the town [Walnut Creek] its name was called by the early Spaniards Arroyo de las Nueces y Bolbones, Creek of the Walnuts and the Bolbones Indians, from the wild, hard-shelled, black walnut trees that lined its banks and from the natives of the vicinity." Hulanski in his *History of Contra Costa County* says that the town of Walnut Creek "came by its name in recognition of its being the habitat, and the only one in the West, of the black walnut, which flourishes in all its glory along the banks of the waterway which meanders through the town."

In regard to the name Bolbones, Hulanski says: "When the white man came upon the scene there were four tribes of Indians in Contra Costa County. These were the Juchiyunes, Acalanes, Bolgones and Carquinez Indians." Purcell lists sixteen tribes of Indians who inhabited Contra Costa County. "The Bolbones, one of the larger tribes, inhabited Mount Diablo's caves and peaks, canyons, ravines and the banks of its creeks. . . The Pulpunes lived on the east side of the mountain, around Marsh's rancho." Kroeber in his *Handbook of the Indians of California* says that the above names were applied to villages or settlements of Indians in Contra Costa County and not to different tribes. He includes all the natives of the east and northeast San Francisco Bay regions in the Costanoan race. Berger says: "The most common unit was the small village or rancheria, with practically no tribal or social organization." Quoting Kroeber *(California Place Names of Indian Origin)* again, "Bolbones, or more fully Arroyo de las Nueces y Bolbones, a grant in Contra Costa County, probably derives its name from a village whose inhabitants were called Volvon, Bolbon and Bulbones by the Spaniards."

The Bolbones, like all of their race, were of a low order of humanity. The picture of "Ishi," a native Californian Indian, in *Pacific Discovery,* Vol. I, No. 4, p. 13, gives an idea of their appearance. Bancroft says: "Man was sunk about to the utter darkness of the brutes. . . They were squat and fat in figure, rather stoutly built, with large heads covered with coarse thick hair and repulsive countenances. . . The Californians, comparatively speaking, wore no clothes, they built no houses, did not cultivate the soil, they had no boats, nor did they hunt to any considerable extent; they had no morals and no religion worth calling such. . . In their personal habits they were filthy in the extreme. Both their dwellings and their persons abounded in vermin which they caught and ate." According to Kroeber, "they were dark, dirty, squalid and apathetic; and travelers coming from the north as well as those arriving from the south were struck by the obvious paucity and rudeness of the native culture in the Costanoan area as compared with other regions. Choris paints their temperament in two phrases: 'I have never seen one laugh. I have never seen one look one in the face.' . . The men were accustomed to go naked when weather permitted. The women wore the usual two short skirts, one before and one behind, made either of deerskin, tule or bark fiber. The rabbit-skin blanket served both as blanket and bedding. . . A common custom of the men was to coat themselves thickly with mud in the morning until the sun shone warm. . . The aboriginal house was primarily a structure of poles, covered with brush or tule matting." Near San Francisco Bay, according to Crespi, "the natives had no houses except little fences of branches against the cold winds."

The Bolbones were rapidly demoralized and soon completely exterminated by the vices, diseases, and other destructive influences introduced

* Now called Marsh Creek.

*Large southern California black walnut tree by roadside between Ventura and Ojai Valley. (Bulletin 231, University of California Agricultural Experiment Station)*

by the white man and the "civilization" which he brought with him to the Golden State. The well-meant efforts of the mission priests only hastened the end. Purcell says: "Civilization bestowed all its vices and few, if any of its virtues on the red man." Kroeber wrote in 1925: "The Costanoan group is extinct so far as all practical purposes are concerned." Thus it was that when *Bulletin 231* was prepared less than a century after the first settlement of the white man in this region, the original inhabitants had been so far forgotten that considerable local inquiry among well-informed people yielded no clue to the meaning of their tribal name. "The larger part of a century has passed since the missions were abolished, and nearly a century and a half since they commenced to be founded. These periods have sufficed to efface even traditional recollections of their forefathers' habits." (Kroeber, 1925.)

The identity, origin, and subsequent history of the "Nueces" or "wild, hard-shelled black walnuts" present a more attractive subject. Although this tree was far less common in central California a century ago than it is now, Hulanski is not correct in his statement that the Arroyo de las Nueces was its only habitat in the West. There are at least five species of black walnut native to the United States. The best known is the Eastern or American black walnut, *Juglans nigra,* which extends westward in its range into Texas. Further west are found *Juglans rupestris* of Texas and New Mexico, *Juglans major* of southern Arizona, *Juglans californica* of southern California, and *Juglans hindsii,* the name given to the Contra Costa County species. *Juglans sieboldiana* from Japan is represented in California by a large old tree (if it is still there) at Tower House, Shasta County. The large tree which stands in front of the Nut Tree Inn, near Vacaville, now almost a hundred years old and declining, is thought to be of the Arizona species, *Juglans major.*

A native black walnut is a rather common tree in southern California, growing in foothill regions between Santa Barbara, San Diego, and San Bernardino. It is abundant, for instance, along the west side of the San Fernando Valley north of the Cahuenga Pass and in the Santa Monica Mountains between there and the coast, in the San Jose hills above Covina, in Brea Canyon near Whittier and other canyons further south, in some of the foothills north of San Bernardino and near the Cajon Pass, and between Ventura and the Ojai Valley. It is usually seen in a low, round-topped, shrubby form, often with several stems, but specimens are not uncommon of large size and with single stems up to four feet in diameter. In these the lowest main branches often extend far out horizontally and may even rest on the ground. Such specimens have been well characterized by Jepson as "elephantine," on account of their broad, flat-topped, compact form, in which respect they differ strikingly from the tall, erect, clean-stemmed style of the northern trees. The nuts, which are produced abundantly by trees of the southern species, are very small, smooth-surfaced, and hard-shelled. Sereno Watson, who first described *Juglans californica* in 1875, characterized it as "a large shrub or tree in the vicinity of San Francisco, growing 40 to 60 feet high and 2 to 4 feet in diameter, and ranging southward to Santa Barbara, Southern


Arizona, and Sonora." His description was apparently based on the southern California form, which is therefore considered the type of *Juglans californica.* Certainly no one could describe the northern form as a shrub.

It has long been noted locally and confirmed by a good deal of search in California that no endemic walnut trees occur in the territory between Santa Barbara and Contra Costa Counties. Also that while in the south the black walnut is typically an indigenous growth, almost all the trees in the central and northern part of the state have been planted by man since "the days of '49." So far as is positively known, according to investigations by Jepson confirmed and supplemented by those reported in *Bulletin 231* and later observations, there were only three localities in this part of the state where native walnut trees were growing when the Spaniards arrived, and in each of these places there was only a comparatively small group or grove of trees which appeared to have been planted, no doubt accidentally, in proximity to an Indian settlement rather than constituting an indigenous growth. The three places had no great similarity to each other and in all the thousands of square miles surrounding them no other unquestionably native walnut trees have ever been found. These places included that already mentioned in Contra Costa County, another along the banks of the Sacramento River from Freeport to its mouth below Rio Vista with the main group of trees near the site of the present town of Walnut Grove, and a third location in the hills east of Napa on the west side of Wooden Valley. Lines connecting these places form a triangle of roughly forty miles on each side, enclosing Suisun Bay.

The trees in all these places were of similar type, of tall, majestic form, single trunks up to four, five or even six feet in diameter and bearing smooth-shelled nuts almost twice as large as those of the southern California species but smaller and much smoother than those of the eastern black walnut. Jepson described the northern type as *Juglans californica* variety *hindsii* but later concluded that the characteristics which distinguish it from the southern form are not hereditary but only the effect of favorable soil and climate. The name was given in honor of Richard Brinsley Hinds, botanist of the Sulphur Expedition, who sailed up the lower Sacramento River in 1837 and noted the black walnut trees growing along the banks. *Bulletin 231* gives evidence, with supporting photographs, that *Juglans hindsii* is not identical with *Juglans californica* but is a distinct species, a conclusion which later was accepted by Jepson and other botanists. The two types were grown from the seed in both southern and northern California and compared at all ages. *Juglans hindsii* indeed resembles *Juglans major* of Arizona more than it does *Juglans californica.*

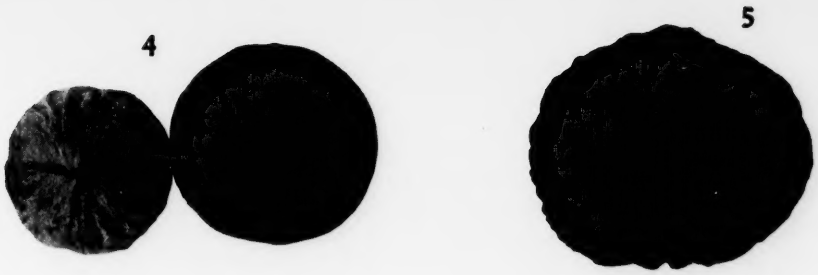
The exact locations where the "Nueces" grew in Contra Costa County in pre-Spanish days cannot now be determined with complete certainty since most of the sizable original trees were cut for lumber many years ago.

J. Pettit, in a valuable article printed in 1871, in the second volume of the *Pacific Rural Press* says, "I send you a few hints in reference to the walnut trees in Contra Costa County, as recited to me during my visit there. With the exception of a few near Mud Springs, in El Dorado County, these are the only ones of this species on the Pacific Coast, at least so far as I have been able to ascertain. I think they are natives of this State. Some assert that they were brought here by the early Spanish missionaries, but if so, why are they not found at any of the old Spanish missions? Walnut Creek, on the banks of which they chiefly grow, rises in Trampas hills, and about twenty-five miles from its source empties into Suisun Bay. By the Spaniards it is called Nueces. The trees are found scattered along its banks for the distance of some fifteen miles. The trees are much admired."

Jepson and others have mentioned Walnut, Lafayette, and Las Trampas creeks as original habitats. Las Trampas Creek rises in the hills of



*The old grove of northern California black walnut trees near Burton Station on Las Trampas Creek, Contra Costa County.*

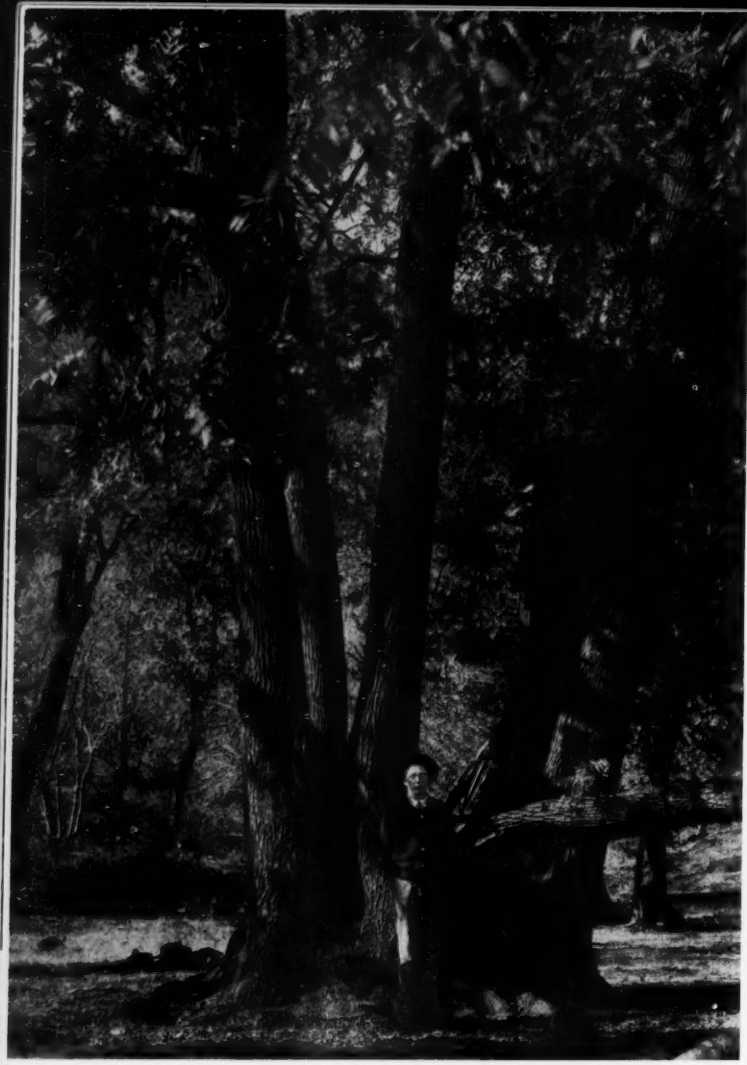



*Nuts of the American species of Juglans, natural size: 1. Southern California, J. californica. 2. Arizona, J. major. 3. Five different types of J. rupestris from Texas and New Mexico. 4. Northern California, J. hindsii. 5. Eastern, J. nigra. (Bulletin 231, Univ. Calif. Agr. Exp. Sta.)*

the same name, west of Danville, flows northwest to a point just below Saint Mary's College, then northeast to the vicinity of Saranap, merging with Lafayette, Reliez, Grizzly, Tice, and other streams from both sides to form Walnut Creek which combines with San Ramon Creek just south of the city of Walnut Creek and continues northward to Suisun Bay. At the present time the greatest number of supposedly "wild" black walnut trees is to be found in a grove or scattered group along Las Trampas Creek near Burton Station in Moraga Valley below (north of) Saint Mary's College. The large trees shown in Figure 6 of *Bulletin 231*, taken about 1910, were in this group, and old settlers who were interviewed at that time considered this the oldest locale for black walnut trees in Contra Costa County, although they said the largest trees were cut long ago. The nucleus of this group is a grove of a score or more of large, very old-looking, badly broken down and deteriorated, partly dead trees situated on the east side of Las Trampas Creek, just below its junction with Grizzly Creek. Their poor condition is largely due to mistletoe, which is extremely abundant and destructive here. Other trees of various sizes and ages are scattered up and down the creeks for a mile or more in each direction. These range from thrifty seedlings to tall, healthy-looking trees with trunks four or five feet in diameter, but none are as large or old-looking as some of those in the main group. There are two which resemble these about a mile up Grizzly Creek. From the size and condition of the oldest-looking trees one can readily believe them to be of pre-Spanish origin.

Anyone who is interested in this subject would do well to see these gaunt, rugged, picturesque old relics of a by-gone age before they pass out of existence. They are nearly surrounded by a young walnut orchard and directly in the path of the extension of "utilities" and "subdivisions." To reach them one should drive about two miles beyond Saint Mary's College, going north, on the road which passes in front of the college and parallels the Sacramento Northern Railroad and Las Trampas Creek. Starting at a point about one half mile from the college he will see naturally-planted black walnut trees of various ages growing in the brush and native vegetation on both sides of the highway. A little beyond Burton Station there is a bridge crossing the creek to the right (east). Turning right again, up the creek on the east side, there is an extensive walnut orchard on the left and about two hundred yards from the bridge on the right is the grove of old trees. The first tree to be reached is the largest, a sturdy but broken-down old giant over six feet in diameter below the first branches. Standing here today looking through the old grove over the little flat at the junction of the creeks, it seems most unreal and fantastic to imagine that on this very spot, scarcely more than a

*wal-*
*mpas*



*Oldest tree of Juglans hindsii in the original grove east of Napa, taken about 1910. (Bulletin 231, University of California Agricultural Experiment Station)*

century and a half ago, "Las Nueces y Bolbones" lived their primeval existence, completely unaware of the cataclysm which was about to burst upon them.

The old trees in Napa County are located on property belonging to Monson Brothers, occupying several acres of moist, mountainous land in a glade surrounded by and intermingled with a native growth of madrone, Oregon maple, California laurel, and oak at an elevation of about 1,500 feet. Although a naturally forested area, it is on the site of old Indian settlements and the walnut trees give one strongly the impression of not being indigenous to the spot. The size and condition of some of them, however, indicates that they may have been large, old trees when the Spaniards came to California.

Most or all of the original trees on the Sacramento River were cut many years ago. A considerable amount of information about them obtained from old time River residents in about 1910 is contained in *Bulletin 231.* The walnut trees were said to have grown on high spots along the bank rather than back in the swamps. The name of the town Walnut Grove is of course suggestive.

During the forty-year period since these observations were begun many other trees have been pointed out to us in the territory between San Benito and Lake counties as "wild" black walnuts, but in no case has the identification been substantiated.

The problem of the origin of the northern California black walnut is still unsolved. Jepson and others have thought that the northern trees originated from nuts of *Juglans californica* brought from southern California, and this would be an easy solution of the problem. But even casual observation of the two types, combined with the evidence given in *Bulletin 231,* makes this seem out of the question. It may be that *Juglans hindsii* in a truly indigenous state had disappeared long before the Spaniards arrived in California and existed only in the three more or less accidental plantings which have been described. Sudworth says: "The walnuts are of ancient origin. Remains of numerous ancient species once common in Europe but now extinct, have been found in the Cretaceous and Tertiary formations, while in the northern Pacific coast regions signs of ancient walnuts have been obtained from the Eocene formation as well as from gold-bearing gravel beds of the California Sierra. No living representatives are found in these regions now."

The coming of the white man to California had quite the opposite effect upon the Nueces from that which decimated their co-godparents of Señora Pacheco's rancho, the Bolbones. According to all the information discovered by us the situation with the black walnut trees remained unchanged (except that some of the largest ones were cut down) until about 1850 when Americans in large numbers began to arrive and locate permanent homes in California. Before that time, apparently, the Spanish settlers here were not inclined to plant native trees for shade or ornament. *Bulletin 231* gives the history of some of the largest and oldest northern California black walnut trees

now in existence from information obtained about forty years ago, and they were all planted after 1850, from nuts obtained at Walnut Grove or Walnut Creek. Such trees are very numerous in California today as isolated specimens and avenue plantings, and individuals are not uncommon with a trunk diameter of four feet and more and a height of more than a hundred feet. The finest one we have seen is on the old John Woodward place on the Bear Creek Road in upper Briones Valley, Contra Costa County, just over the divide from Orinda. This noble specimen, which is of particularly symmetrical form and has a trunk diameter of about six feet, is said to have been planted by Mr. Woodward in 1875 from a nut obtained at the grove near Burton Station. In San Ramon Valley where the town of Walnut Creek is located there are hundreds of magnificent specimens of this fine native tree, as well as younger ones of all ages. The same is true of almost all parts of central California. Even in the cities fine, large, healthy black walnut trees are frequently seen. The Nueces have flourished in town and country alike.

In addition to its esthetic value, which is really great, the northern California black walnut has also become of major utilitarian horticultural importance, not on account of its own fruit but as a rootstock for the edible English walnuts. The latter were grown as seedlings in California from the time of the missions until near the end of the nineteenth century. Then, as superior varieties were introduced from abroad or developed among the local seedling trees, a demand arose for a hardy, compatible species to serve as a root or understock for the more delicate English walnut, and for this the native tree proved wonderfully satisfactory. It was also found to have a high degree of resistance to several serious pests and diseases which attack the English walnut root, particularly gophers and the rotting of the roots caused by the so-called oak root rot fungus. On account of this quality black walnuts for grafting are often planted in prune orchards where trees have succumbed to this parasite. At present the whole California walnut industry is based on the native walnut root. In some cases the black walnuts are planted in the nursery and the young seedlings grafted at ground level with the desired variety of English walnut; or a popular practice has developed, especially in Contra Costa County, of planting out little black walnut seedling trees in orchard form and grafting them in later years at some distance from the ground. By this method it has been made possible to grow walnuts on thousands of acres of unirrigated land where the English walnut on its own root could not exist. Many large black walnut trees standing singly or in rows have also been cut off and grafted. According to official figures there are now more than 11,000 acres of walnuts in Contra Costa County which represent close to 300,000 trees, and all of these are grafted on the native species. The walnut is also grown largely in Santa Clara, San Joaquin, Lake, Napa, Tulare, Stanislaus, Sonoma, Butte, Sutter, and other counties of central California, as well as in southern California. The latest statistics show that there are more than three million walnut trees in California, and at least 95 per cent of these are on the native black walnut root.

The impact of foreign invaders upon the aborigines of a country has sometimes resulted, by cross breeding and intermarriage, in the development of improved races or individuals superior to the original natives. It was not so with the Bolbones. Kroeber says of the last of their race, they were "of mixed tribal ancestry and lived almost lost among other Indians or obscure Mexicans." Far different is the story of the Nueces in respect to the results of contact with other races of their own kind which came to California with the white man.

*The big Woodward tree, Briones Valley, Contra Costa County.*

*A walnut orchard is started by planting black walnut seedlings in place for future top-grafting.*

*When the black walnut seedling is a few years old it is cut off above the ground and an English walnut seedling is grafted to the stump.*

*This is a thriving young top-grafted walnut tree.*

**Photographs by the Author unless otherwise credited**

*Graft union of English walnut tree which was grafted in the nursery on a black walnut root. (Bulletin 231, Univ. Calif. Agr. Exp. Sta.)*

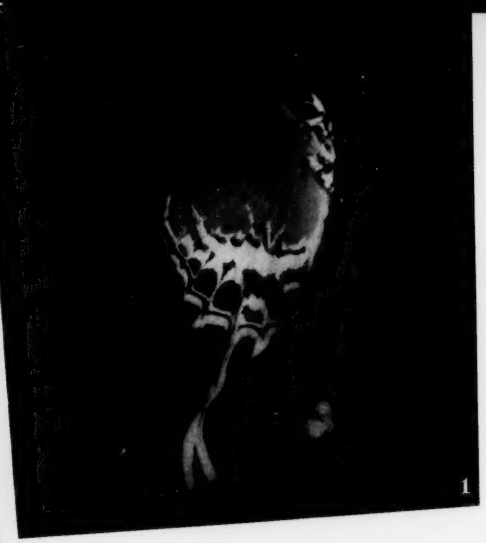
Of such immigrants the English walnut, *Juglans regia,* was introduced by the Spanish missionaries before 1800, and the eastern black walnut, *Juglans nigra,* by early settlers from the Middle West in the 1850's when there were several large nurseries in California. Trees of both species are common here in many parts of the state.

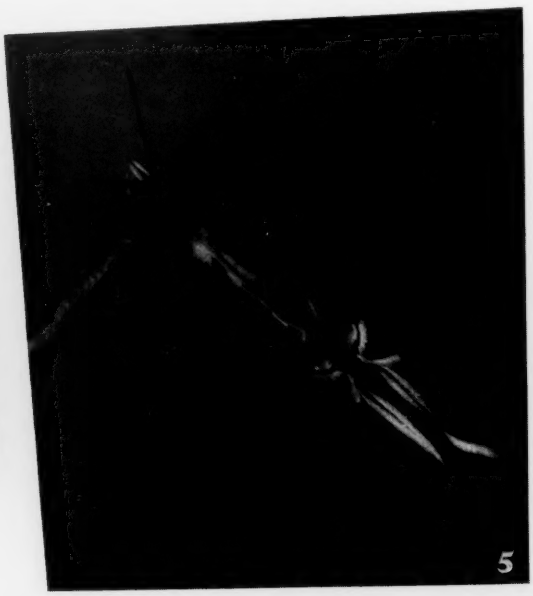
It was noted many years ago that where walnut trees of any two different species stand near one another, and if nuts from either tree are planted, many of the resulting seedlings grow into trees of extraordinary size and vigor. Luther Burbank became interested in this matter as early as 1875 according to Howard in *Bulletin 691* of the University of California Agricultural Experiment Station, and in 1893 he introduced two new types of walnut which he called Paradox and Royal. Paradox was said to be a cross between the California black and the English walnut. Royal was the offspring of the native species and the eastern black. Whether or not Mr. Burbank "created" these trees, others of the same types are very common among seedlings from any walnut tree which stands near one of another species. So readily do walnuts cross in this manner that now, after more than a century of interspecific association, crossing, recrossing, and succession of seedling generations in California, we find a very large number and great variety of hybrid trees of complex heredity and all sorts of unusual or "freak" characteristics. Some of these trees would certainly puzzle a botanist if he were not familiar with the situation. Most of them contain the "blood" of the California black walnut. They are of no value for their fruit since the nuts which they bear are not superior to ordinary black walnuts. The remarkable feature of these trees is the extraordinary vigor which some of them possess. One of the most outstanding was that called the Yuba City tree, a gigantic specimen of the Paradox type, which unfortunately was destroyed some years ago. Others of the same type were the Camulos tree, on the old Del Valle ranch in Ventura County, and one on the Whittier State School grounds which was planted by the writer of this article in 1907 and is now of enormous size. The native parent of these two last-mentioned hybrid trees was the southern California black walnut, which accounts for their broad, spreading form. Another hybrid tree which certainly must be one of the largest and most beautiful walnut trees in the world, is the original Burbank Royal which was planted about 1885 in a dooryard on Sebastopol Road just out of the city of Santa Rosa. This tree is over five feet in diameter and 100 feet high and perfectly healthy and symmetrical. It bears enormous crops of nuts similar to Eastern black walnuts.

Many more examples of hybrid trees could be mentioned; in fact, a rather large percentage of what pass for native walnuts in California today show mixed parentage.

And so here again the Nueces adapted themselves to the new era, and through contact with other races of their kind developed individuals of increased vigor and improved constitution while their human associates, the Bolbones, were succumbing to the foreign influence. Kroeber estimates that when the Spanish arrived here, the number of native Indians of the Bolbones and their relatives may have been 7,000. The number of native walnut trees in this area at that time could not have exceeded a few hundred. When we now contrast the pitiful end of the Indian race with the millions of black walnut trees which have come into being since 1850 and serve to beautify and enrich California, and gaze upon individual examples like the Woodward tree and the Burbank Royal hybrid, we must indeed be impressed with the differing fates which were imposed by nature and by man upon "Las Nueces y Bolbones."

*A maturing orchard of English walnuts grafted on native black walnut stock.*





M. W. F. TWEEDIE

# Back-to-front Butterflies

THE ISLAND OF SINGAPORE, lying close against the southern tip of the Malay Peninsula, is about 25 miles long by 15 miles broad. From this small area I believe that over 300 species of butterflies have been recorded. Whether they are all found here now I cannot say, for the island has suffered much

deforestation since collecting began, but 150 to 200 species can be obtained without difficulty.

Most of these are to be found in the remaining wooded areas, especially those which surround the reservoirs. Among these jungle-loving butterflies is a small group of Lycaenidae (corresponding to the temperate blues and coppers) which have extraordinarily long, filamentous "tails" on their hind wings. The undersides of the hind wings have a black and white checkered pattern which in the ones with the longest tails is confined to the area at the base of the tails or even reduced to a group of black spots.

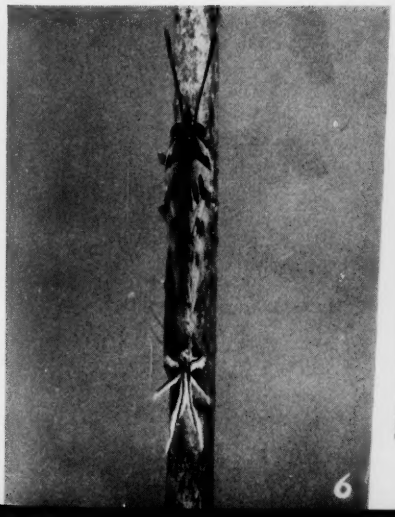
Although these butterflies are quite agile on the wing, their tails cannot do otherwise than hinder them in flight. An ingenious suggestion has been made to account for their development. When at rest they are liable to be stalked by birds and arboreal lizards. The theory holds that the presence of the tails and the conspicuous pattern of the hind wings persuades these enemies that the posterior extremity of the hind wings together is in reality the insect's head; they therefore grab at that portion, which is very easily detached, so that the butterfly flies away disfigured but unharmed. It is supposed that the black spots simulate the eyes, and the tails the antennae of the fictitious insect.

Whether this is so or not must remain a matter for speculation until we can communicate with birds and lizards. But there is reason to suppose that the adaptation affords protection in the manner suggested, and that predators do snap at the tails and hind wings, for specimens are often taken with these portions torn away symmetrically —that is, in a manner indicating the grip of jaws or beak on the folded wings rather than chance contact with a twig or leaf.

The predator may believe it is aiming at the head of the insect or possibly its attention is merely attracted to the most conspicuous part of the butterfly as it sits, with folded wings, displaying only their under side. The conspicuousness is provided by the bold pattern of the whole or the distal (outer) part of the hind wing and the pure white color of the tails. It is enhanced by the curious habit of these butterflies, when at rest, of moving the hind wings up and down alternately so that their apposed surfaces play against one another and the tails are very considerably agitated.

An aspect of the matter which has perhaps not been demonstrated before is the remarkable and conspicuous figure formed by the tails when the butterfly is seen "edgeways on." This is particularly clear in the photograph of *Eoöxylides tharis,* and in that of *Marmessus moorei* taken from below, and is due to the twisting outward of the lobes at the base of the tails themselves.

1. *Eoöxylides tharis tharis* Hbn.
2. *Biduanda thesmia minara* Hew.
3. *Zeltus etolus maximinianus* Fruhst.
4. *Zeltus etolus maximinianus* Fruhst.
5. *Marmessus moorei moorei* Dist.
6. *Biduanda thesmia minara* Hew.
7. *Marmessus moorei moorei* Dist.
8. *Eoöxylides tharis tharis* Hbn.



BORYS MALKIN

# CLOUDS OVER CAMEROON

*At 9,500 feet on cloud-swept Cameroon Mountain.*

Bindiba, French Cameroons, 19 July 1949

DEAR *PD:*

Don't try to find this name on the maps you may have. It is a small settlement like any other of the thousands throughout the French Cameroons, a mining camp attached to a village of the same name in the Betaré-Oya subdivision. Bindiba is very close to the boundary between Cameroun (the French spelling) and the colony of Ubangi-Shari, and approximately 140 kilometers northeast of Betaré-Oya; 6°N. by 14°20'E. would strike it roughly.

I am in the camp of one M. Schuler, a young Alsatian who manages single-handed his own small gold mine and 250 native workers. Try here to capture the atmosphere in which I am writing—by a fireside with flames brightening the room. Surprising, perhaps, but Bindiba is on a plateau of grassland almost 3,000 feet in altitude. The rainy season is at its height. Torrents have fallen since yesterday and the cold is considerable. Long unused to low temperatures, we suffer without the fire. Such days remind me of springs in Poland and in Oregon when I looked out longingly, waiting for the rain to stop so I could go after insects.

A 1,200-mile jeep and truck journey brought me here from Douala, near the coast. In West Africa such a journey is a major expedition lasting several days, even in these parts where the roads are fair (all weather).

I have really begun from the wrong end of the report. It will be better to start from over three months back when I left Lagos, Nigeria, for Victoria in the British Cameroons.

After much delay in getting ship to Victoria (a port rarely visited except by ships out of Liverpool) I finally shook off the dust of Nigeria. It was April 16 when the *Pathfinder* departed from Lagos. I shall not try to describe this glorious ship, but may remark that she is—or was—very dirty. (Since I traveled on her, she has been relegated to the junkyard and replaced by the more sumptuous *Dayspring*—named, no doubt, after the famous ship wrecked on the Niger near Jebba over 80 years ago.)

The trip lasted five days without event. On the second day we passed Akassa Point, which boasts 12 feet of rain per year and the only lighthouse on the Nigerian coast outside Lagos. The third day, which fell on Easter Sunday, we stood into Calabar. Well within the mouth of the Cross River, this port is perhaps the oldest European settlement in Nigeria. It is unusually orderly and clean for these parts. Sunday and Easter drew into the streets thousands of the black inhabitants—many under the influence of *Bimbo*, wine of the oil palm *(Elaeis guineensis)*—frolicking and dancing. Many, children especially, wore masks of raffia and straw palm fiber or paper, sufficiently monstrous to scare people. Doubtless in former times these masks had ritual significance.

After Calabar it was but a brief sail to Victoria. We got a quick sight of 9,000-foot Pico de Santa Isabel, dominating Fernando Po Island, before it vanished into the clouds, to the right; and to the left, across the strait, the Little Cameroon and the huge body of the great Cameroon Mountain rising over 13,000 feet out

*This would be Halloween at home, but it's Easter in Calabar, West African seaport town in Nigeria.*

of the Gulf of Biafra, West Africa's loftiest peak, a volcano active in this century.

Victoria, seaport of Buea, capital of the British Cameroons, lies on Ambas Bay at the foot of the southern slope of Cameroon Mountain. Eastward the Cameroons River (or bay, or estuary) indents the coast of French Cameroons. Portuguese discoverers named it Rio das Camarões (river of prawns). The large territory of the Cameroons—British and French—was a German protectorate, Kamerun, before it was split and mandated to the two victor nations after the Treaty of Versailles.

Ashore in Victoria, I lingered only long enough to find transportation inland. For the next two weeks I occupied an empty house in the Matute section of the large Tiko Plantation. The house was a relic of German times, built upon high concrete poles to protect it from gnawing termites. Virgin forest was only 200 yards away. Southward across open plain a sharp pointed peak sometimes appeared in the afternoon. It took me several days to realize this was Pico de Santa Isabel—the 30 miles of water between British Cameroons and the Spanish island of Fernando Po could not be seen. Immediately to the west the enormous body of Cameroon Mountain lay like a sleeping dinosaur, with dark streaks marking its forests. It was said that elephants come in the rainy season to this part of the plantation, but I saw none.

Soon I discovered that many notions I brought with me from America and elsewhere had to be discarded. I first worked in a large area where freshly fallen trees suggested fine collecting ground. Nothing doing. Trees were cut every day but insects seemed to shun the place. So I took to the forest depths, walking back and forth along the trails, sweeping to the sides with my net and breaking up rotting logs. An advantage of this was the coolness of the interior, away from the intense sun.

Sweeping netted by far the greatest profusion of insects and spiders. Many were small and drab but perhaps among them were the most interesting of all groups and orders. On the other hand, some jumping spiders (family Salticidae) and certain beetles of the family Tenebrionidae brought to mind the old question whether tropical animals—insects especially—are more spectacular in color than those of temperate regions. A large percentage of these I caught were brilliantly colored; northern representatives of the two families are usually dull—a yes answer to the question seemed in order on the basis of my collecting in this particular tropical forest.

One day, on a winding way through the forest, I ran into what at first looked like a small clearing. The cause of it, I quickly saw, was a huge hollow log fallen to the ground. The cavity was large enough for me to stand erect in, and perhaps 25 feet long. In its bottom was accumulated water—brown, repulsive, full of the debris of rotten foliage, twigs, sawdust, and insect remains. As I approached this morbid pool there was a deep, low sound and presently several bats fluttered away into the sunlight. The insect remains probably represented their diet. There was something very unreal about all this, as if I had entered a different world. It wouldn't have seemed strange had I found *Archeopteryx* living in this dark cavity. But I put fancy aside and went to work.

A great number of striders and smaller aquatic Hemiptera skated upon the foul water. I dipped my net. Picking over the debris, I saw a huge and brilliant

ABOVE: *Termites' nest in the forest at Matute, Tiko Plantation.* LEFT: *Former German owners of Tiko had built the Matute house on concrete pillars to stave off the termites. Here the author stayed.*

beetle of the family Buprestidae, drowned, the first of this sort in my African collection. What pleased me far more were several aquatic beetles, and their larvae —this was a breeding ground for them, in the very depths of the rain forest. Certain mosquitoes breed in just such places, but these predacious diving beetles (family Dytiscidae) generally prefer clear water. In the rain forest they seek out curious habitats, I learned. Mornings, just after rain, I took several small dytiscids from foliage. As the leaves dried off the beetles disappeared.

Night work varied but was without spectacular success. Large insects came very rarely, the majority of my prey being minute fry—parasitic Hymenoptera, Diptera, microlepidoptera, and so forth. Sitting by the lamp placed on my large all-purpose canvas (it served, in turn, as collecting sheet, tablecloth, blanket, wrapping, or whatever), I watched the insects come and listened to strange voices out of the jungle. There was in particular a queer, weak voice, low and like half-weeping, repeated in regular intervals throughout the night. I could not recognize it, but my cook explained it thus: "He be so small, Mastah"—measuring the air with his hands. "She go cry so when she come to deliver. He fall for down [from the tree] and the pickin' come out. She cry, she go, go die when the pickin' come out." His description of an animal suggested the chameleon, but I could not connect the native legend about chameleons with the strange, depressing voice. I have never discovered what it was.

MABETA, a place 12 miles from Victoria, offered considerable contrast to the Matute section, although both appear to be in the same low forest zone and are perhaps less than 20 miles apart by air. But Mabeta is on the very edge of the sea, and this, I believe, makes the difference. Salt-laden sea breeze is evidently unfavorable to much insect life. One day toward the end of May I walked to Mabeta, 12 miles across the hills afoot through dense forest which ends suddenly to open up into an abandoned plantation.

This plantation, like the Tiko, was once the home of German settlers, but they were removed in 1939 and no one has lived in the Mabeta house since, or attended to the plantation. It had been largely in bananas, with some oil palms. Now the jungle has taken over, with creepers strangling bananas. The pleasant house looked out over the Tiko River estuary; but termites took advantage of human absence and did a very fine job of wrecking. Walls were largely eaten out; window sills and furniture fell apart at a touch. There was, nevertheless, an excellent view out over the estuary and down to the sea through a fine row of coconut palms. In back was a garden with fruit in variety and quantity – avocados, papayas, oranges (now out of season), and giant grapefruits.

I was very comfortable in this house, termites or no, although the first morning brought another menace. When I woke up, a discarded snake skin over a yard long dangled outside the window. The beast was in the house, we felt sure, but we never found it. The following night I was awakened after midnight by violent knocking on my door.

"Mastah! Shnake bit me!" a dark voice cried.

I imagined the worst—a cobra or some other deadly serpent. It was Fabian, the local hunter. He had an

LEFT: *The author collecting insects in the rain forest of the Tiko Plantation.*

CENTER: *Stephen Tita, plantation supervisor and capable collector of insects.*

RIGHT: *The author's baggage on the forest trail between Victoria and Matute.*

**Photographs by the Author**

ugly, deep, and dull wound on the leg, as if smashed in by the customary "blunt instrument" of the detective stories. I relaxed—this was not the work of a venomous snake. I patched Fabian up the best I could, then looked over the serpent which was brought forthwith, minus its head which Fabian had cut off. His account of the affair was terse.

"I walka on the shnake. He go bite me. I go cut head with cutlass."

"Why didn't you bring in the head?"

"I cut him. He walka for the bush."

So much for the head end! It was an 11-foot African rock python he'd cut in two. I examined the recovered part for ectoparasites, then dissected the lungs, hoping to find the peculiar mites that live in them, but without success. But from the intestine out fell some long worms and nematodes. Later the "boys" brought over some more of them, as well as two pounds of flesh as a "dash." I had the snake boiled, then fried—here was a source of meat, so scarce in the forest. I thought uneasily about all those parasites, but had to taste the "shnake." It was good.

During my stay in Mabeta the native supervisor of that part of the C.D.C. plantation was most helpful in every possible way. In him, Stephen Tita, I found an incomparable collector and assistant. Frequently, as he went about his work in the forest he carried the vials and cyanide jars I gave him and never failed to bring insects in numbers and variety enough to put many entomologists to shame. With quick eye he could promptly recognize the things I wanted as well as those I didn't. Often at night we went together armed with lantern and flashlights to look for large ground beetles which crossed the path, or to wait by the stream for caddis flies to come to the light. Stephen was intelligent and well educated, having reached the "standard six" in school—a lot of education for the Cameroons native. When I left Mabeta I provided him with a fair supply of vials. According to his recent letter, he has them well filled with insects for me.

Yaoundé, French Cameroons, 24 July 1949

CONTINUING WITH THIS REPORT which was interrupted when I left Bindiba: In May, between work at Tiko and Mabeta, I went up Cameroon Mountain.

A climb of more than 3,000 feet over 22 miles of winding road took me from Victoria to Buea, where the temperature is several degrees below that of the steaming coastal lowland. To climate, of course, Buea owes its position as capital of the British Cameroons, although intense rainfall (about 200 inches annually) and cloudiness during the rainy season are unpleasant features. But it is suitable for European settlement. Many vegetables can be grown here. Freedom from the tsetse fly has long made it a cattle-raising center, stock having been introduced quite early in the days of German occupation. Among other legacies are the large and indescribably ugly residency building, and somewhere the inevitable monument to Bismarck.

After a few days in Buea for acclimatization, I decided to go up the mountain. Above Buea the only way to transport baggage is on human heads for there is neither road nor beast of burden available. And here I ran afoul of native disinclination toward carrying. In these parts of Africa the people don't like physical effort any too well, especially when it in-

volves employment as carriers. Nor can they be compelled to it, under existing regulations. After three futile days of endless palaver I almost gave up, until Mr. Cudmore, the Assistant District Officer in Buea, came to my aid and persuaded three of the station men to carry my baggage up and to return upon a designated day to carry it down.

We moved up then to the first shelter, a hut at about 6,000 feet elevation. There on the mountain slope I remained for nearly a week. First I lived in my small army tent, but heavy rain made me move over into the only dry corner of the hut, the rest of which flooded because someone had made off with the tin roof.

This stop in my travels came none too soon. Quite worn out by the tropical vagaries of the Nigerian dry season, with its *harmattan* and heat, I was revived by the coolness and fresh mountain air of this place. I kept temperature records for several days, and this example may give you an idea of one of the evenings: Average of half-hour readings from 6 to 8 P.M.—55.5°F., dropping from 61° to 52°. This was quite characteristic but colder days occurred. One evening I recorded 52° at 7 P.M. and an hour later 47°. This was only the beginning of the rainy season; undoubtedly the temperatures would fall lower as the season advanced.

A sweater and heavy combat jacket which served me so well in the Sahara's winter came handy now, and I kept the thermos constantly refilled with hot tea or Nescafe. I made sure to stay dry, for prolonged exposure to intense heat lowers one's resistance to humid cold and sudden temperature drops. (I remember how I shivered when wet on Mt. Maquiling on Luzon although at much lower elevation.) My sleeping bag, which I never expected to use in Africa, proved a life saver—I wouldn't have lasted long without it. If I managed to stay well my "retinue"—an old, decrepit, and quite incompetent cook, and the two "watchnights" (night watchmen)—suffered misery. I heard them groaning throughout the night and complain in the morning that their bodies "hahd too much." Two weeks after we returned to the lowland the cook still suffered from after-effects of exposure, even though he slept under four blankets. These people haven't much resistance to such climate, and their stamina is lowered greatly by disease and exceptionally inadequate diet.

Around the hut were more relics of the German regime. Begonia, while native to Africa, was here obviously planted. I discovered traces of former orderly paths and decorative bushes planted—all very *gemütlich* and artificial, out of tune with the surrounding mountain forest.

It was this forest which compensated for incongruities. Untouched—intact except on the lower slopes—and very difficult to penetrate, it has few paths leading to its interior. It begins at 4,000 feet right above Buea where it is virtually decimated by overgrazing and by clearing for cultivation. Great tree ferns grow a little higher up and on as far as 5,000 feet, forming a zone of peculiar and seemingly restricted fauna, distinct even from that immediately above Buea which was in turn remarkably different from the lowland fauna.

Above the tree fern zone the forest is even denser, reaching to 7,000 feet and perhaps a little more in the tongue-like projections up the canyons. Giant trees are few and without the buttressing roots one finds in the lowland rain forest. Most trees are of medium stat-

LEFT: *Savannah country around Buea. Mist obscures Cameroon Mountain in the background (it barely showed in the author's negative).* ABOVE: *In the mist forest at 6,000 feet on the mountain's side. Mosses, ferns, orchids, and other epiphytic plants thrive on the trees in the moisture-laden air.*

BELOW: *Upward into the clouds—the slope is steep and the air is cold and wet at 9,000 feet on Cameroon Mountain.* RIGHT: *At 10,000 feet the ground cover is short, and stunted, twisted trees struggle against the wind, their branches grizzled with lichens. But even here the author discovered a surprising variety of insect life, although the cold forced him and his guide to turn back.*

ure, becoming quite small at the upper limits. A dense growth of mosses, ferns, orchids, and other epiphytes covers trunks and branches. As clouds come and go perpetually, mist is almost always present, the vegetation wet and dripping.

There is a feeling of unreality in all this, of mysterious shifting of view fleetingly freed from the curtain of fog, of twilight only momentarily lifted by streaks of sunlight. Photography with ordinary cameras presented a knotty problem. Part of this atmosphere was the silence prevailing except when rudely rent now and then by shrieks and yells of baboons and the manifold vocal expressions of hornbills. These birds sounded now like irritated magpies, now like crows, and in flight like steam engines. This last effect perhaps gives rise to the numerous stories of mysterious beasts' calls emanating from the forest.

One day I set out with the guide for parts high above camp—it was May 15. Through the forest we went, and soon my guide lost the track, following a wrong fork of the trail. We reached an open space only to turn back to the point of confusion at a stream and follow another path through the forest. The interior was dark and gloomy with trees masked by mist. But at a little above 7,000 feet the forest gave way to vast grasslands. Here the limit of dense forest is much higher than on the East African mountains. There, precipitation is less and forest disappears at 4,000 feet. But Cameroon Mountain is one of the world's rainiest places; on this slope the rainfall exceeds 200 inches, and at a point on the western slope an annual average of 400 inches is recorded.

The grass at first was knee deep but soon dwindled to short tufts. The edge of the forest was very sharply set off against the grass, as if deliberately cut that way, probably a result of fires the natives set in the rainy season for hunting purposes. (In January on the Bamenda plateau—during my first trip into the British Cameroons, overland—I saw black patches looking very much like basalt from the distance, which were actually burnt grass. This practice of grass burning is so widespread throughout Africa that it creates serious problems affecting agriculture and soil, especially on the mountain slopes.)

Slippery and narrow, the path wound tortuously among lava flows. It was a wearisome and seemingly endless climb, though an expert mountaineer would have thought little of it. There were no cliffs to scale, no precipices—only a ceaseless grind up the gigantic mountain, which is impressive in bulk, not in steepness. Sometimes we were shrouded in clouds, sometimes above them. But the clouds do not come haphazardly—there is pattern. One belt hovers at 2,000 feet and another envelopes the mist forest from 4,000 to 6,500 feet, being responsible, certainly, for the nature of the forest. The clouds as I watched them during more than two months came at certain times of the day, right after 8 A.M. and then in the afternoon, but in early mornings and evenings the mountain was free of them.

By 1 P.M. we reached the second hut at almost 10,000 feet (the summit is 13,370 feet), where we rested and ate lunch. That finished, I set out with net and camera. It was still grassland but all vegetation

*A 10,000-foot ridge of Cameroon Mountain--composite panorama from the forest at 6,000 feet, with the clouds lifted. The sprawling volcanic mountain has no definite peak.*

was shorter. Isolated trees stood out like skeletons, short and twisted, their trunks thickly overgrown with mosses and lichens. Their leaning shape indicated the prevailing wind direction. Though it was cold and so foggy I was forever losing sight of trees I wanted to examine, I tried sweeping the vegetation with my net. This and other forms of collecting yielded what was for the elevation a considerable variety of insects and other arthropods, representing eight or ten different orders. Of course accidental introductions may have accounted for some of the species inhabiting this in some ways unfavorable zone.

By 2 P.M. the temperature had fallen to 52°; the moisture in the air felt very penetrating. My African companion shivered. I gave him my rubber poncho to protect him from the wind, and we split between us the remaining coffee in the thermos. Rain threatened and it grew darker. There were still 3,500 feet and two hours of climbing between us and the summit. To start a descent from the peak at 5 P.M. would be folly, and camping out here without warm food, blankets, and fire would have been inviting pneumonia for myself and possibly death from exposure for my Negro guide. I decided against further ascent and soon we started back for base camp.

Coming down was harder, the ground slippery, the surface uneven, and the angle considerable. Falls were frequent. When the sun occasionally broke through, the temperature rose to 65° but mostly we walked through clouds in whose cold mists it fell to 50°. For a moment above the clouds at 8,000 feet we caught a magnificent view of Tiko on the lowland so far below. There were the endless meanders and creeks of the Cameroons River estuary on one hand, and on the other were visible part of Victoria (or Ambas) Bay with its rows of islands, and Monkey Peninsula.

Out with the cameras again. Last film—and suddenly the one in use slips from my hand and rolls down, bouncing off sharp lava for almost 200 yards. It's the one I use for *PD* snaps—I die a thousand deaths thinking of the little pieces I might be able to collect together. I run down after it and fall heavily right behind it. A glance—and relief. Shutter and lens intact, although the camera fell opened out and fully extended. Only visible damage, a few rivets knocked off. I'll never know why I was so lucky (later, I got it repaired in Victoria).

We collected ourselves and continued down, with conditions getting no pleasanter. Wind came up, loaded with drizzle. It got dark. We reached camp at five, just before it caught the violent wind and rainstorm.

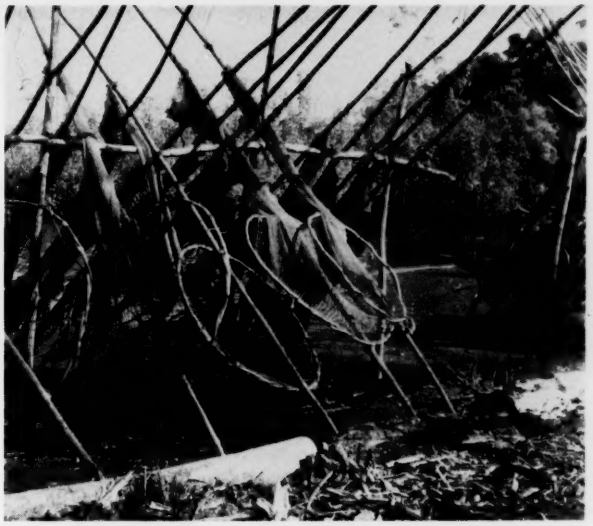
The rain lasted three hours with full force. Then I changed to dry garments, got supper, lit the lamp and set it on the colleting sheet. When the rain ended the insects came in larger numbers than on any other day.

I stayed at this place for a few more days, working up and down daily between 4,500 and 7,000 feet in the forest. In the upper reaches the fauna was naturally much poorer, but looking through humus and digging in debris at the base of trees I found many small creatures, especially Collembola, or springtails, and even tiny isopods, myriapods, and beetles. Apparently high rainfall and cold are not discouraging to such animals. It was like collecting in similar situations in the deep Oregon forests.

On the designated day the carriers came, and, sur-



*Mangroves in the tidal estuary at Mabeta. This scene is typical of the author's canoe voyage up the Cameroons River to Douala.*



*Nets drying beside a fishing village among the mangroves.*

prisingly, exactly on the hour set. Down we went to Buea, and after a few days on to Victoria.

My decision to make for Douala in the French Cameroons via native canoe instead of the motor boat, to save money, evoked misgivings from most Europeans I knew. They shook their heads in pity, sure I was courting disaster, and told of an incident that happened "just a few days ago." A native canoe had overturned, they said, and eleven men had drowned. But I happened to have met one of the men who were actually in that canoe, and his account proved how little stock one can take in rumors that circulate in these parts. None were drowned, although they lost their possessions. I was undismayed, and shoved off with my cook and two paddlers including the owner.

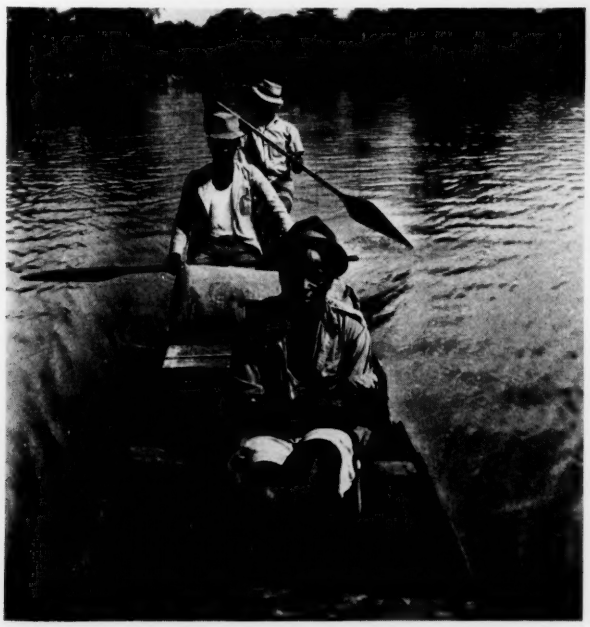
It was a long dugout and, I must admit, very unseaworthy. The prow was broken off and patched up with tin—it still leaked. We had to bail constantly. These canoes are of poor workmanship, nothing to compare with the vessels of Gold Coast fishermen I saw in a fishing village near Victoria Beach at Lagos. Those were fine boats of excellent finish, lacking only the outrigger to rival the products of Polynesia.

I had another reason for going this way: to see something of the mangroves in the Cameroons River. On this account I stretched the trip to two days. At no time did we get into open water, but kept to channels of varying width with mangroves on all sides of us. We paddled through some channels only a few yards wide where, at low tide, the mangroves' aerial prop roots and leafy branches formed a canopy above like an endless labyrinth.

*Washing out the gold at M. Schuler's mine, Bindiba.*

There must have been considerable animal life, but although I watched for signs of it only fiddler crabs and barnacles appeared in large numbers. Now and then I saw a bird or heard a fish snap.

At noon we put in to a deserted fishing village. Still glowing coals in one of the huts showed that someone had left but a short time before. As the sea wind increased over the water—we were in line with the estuary's opening to the gulf—I delayed departure till 5 p.m. It was a quiet place. A huge eagle came down on the muddy beach and allowed me to get within 20 yards. Barnacles grew in profusion; they seemed larger on the trees closer to the shore, though usually the reverse is true.



*Up the Cameroons River in a leaky dugout! The army foot-locker was shipped from San Francisco full of alcohol vials and cigar boxes for insects. By this time the author's African collection numbered over 100,000 specimens.*

ANATOMY OF PARADISE, HAWAII AND THE ISLANDS OF THE SOUTH SEAS. By J. C. Furnas. William Sloane Associates, Inc., New York. 1948. 542 pp., 32 pl. $5.00.

The author's professed purpose in writing this popular book for the general reader is to correct misconceptions and misapprehensions regarding the South Seas. The time period he is concerned with extends from the arrival of the Europeans in the Pacific into the present and immediate future. He defines the geographical area as the "lopsided triangle" of the oceanic islands of the Pacific with Samoa as the approximate center. In this misnamed ocean are misunderstood native peoples toward whom the United States has acquired increasing responsibility since World War II. The author regards the region as of great strategic, but very little economic importance to the western world, and remarks that the white man in the South Seas has "been little better than a nuisance in net effect" and has "got pathetically little economic good out of his intrusiveness."

The book deals mainly with two predominant attitudes toward the South Seas. First is the attitude that it is an earthly paradise, a "spiritual sanitarium," peopled by women looking like Dorothy Lamour and vaguer characters who represent to the sentimentalists, professional entertainers, and energetic tourist bureaus the remnants of "noble savages" of a fading "Golden Age." Disillusioned GIs tarnished this picture without, however, acquiring an objective viewpoint as a replacement. The second major attitude analyzed by Furnas is that characteristic of the multifarious group he calls the "interlopers"—explorers, whalers, traders, missionaries, blackbirders, and political opportunists. Though they may have fallen slightly under the tropical spell at times, they were shrewd, calculating, and exploitative. Hawaii, in a chapter called "Land of Makebelieve Come True," is used as a case example of the post-European history of one archipelago and the interaction of the various interlopers with each other and the native leaders.

Native culture as it was at the time of European arrival is sketched to provide a setting for the book; and a later chapter, "Their Gods Are Dead," tells what happened, and is happening, to the natives as the result of contact with western culture and political administration. The newly acquired role of the United States as "Our Brother's Keeper," the title of another chapter, emphasizes again American responsibility in the Pacific, especially in parts of Micronesia which were formerly League of Nations mandates to Japan but now are under American administration.

Stuck into the beginning and tacked on at the end, almost like last minute patching of a manuscript, are references to the role of the ethnologist in the future of the South Seas. Some of the material of the book is offered as "horrible examples of what comes through misconceptions that ethnology alone can correct," or describes situations for which "ethnology, with its ancillary sciences, alone promises help . . ." According to Furnas, "The ethnologist's day is now dawning very brightly indeed. Within our time, if he shows himself

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About nine we beached again, at a small fishing village. This time we enjoyed human welcoming, had supper, and soon went to bed on the common bedstead of bamboo where a large number of men slept. These fishermen were husky and magnificently built, strikingly different from the scrawny, miserable, and weak people of the inland where I've been. Perhaps this is partly owing to their fish diet and generally higher economic level.

Another day on the river, another night in a fishing village (right across from Douala, but I figured it was too late to find a place to sleep in town), and we were in the principal seaport of the French Cameroons. It is connected by rail with Yaoundé, the provincial capital, from which I am now writing. But from Douala I proceeded to Bindiba, 1,200 miles in ten days, half by jeep, the rest by truck.

The several pleasant days with M. Schuler I spent looking over his gold mine and collecting insects. Rain fell nightly in Bindiba, but later in the month in Yaoundé there has been hardly any—it is the "small dry season."

The country is now covered with lush and lovely fresh grass. Trees, short and scattered, are dense with foliage—so different from the long dry season farther north when for months I traveled through leafless yellow savannah.

In Yaoundé most of my work has been done in company with M. Rageau, the director of the entomological laboratory, and M. Monez, teacher in the local college and keen naturalist. One night Rageau and I went off to the hotel for a drink. In the big lobby insects were swarming around the chandeliers. Rageau, unperturbed by a sizeable audience of hotel guests, climbed upon a chair and calmly began catching the choicest specimens. Not to be outdone, I joined the chase upon another chair. The audience reaction was that of being entertained by maniacs under the influence of drink—all we'd had was a little Port wine!

My next move is uncertain. I hope to visit the Portuguese island of São Tomé in the Gulf of Guinea, and to get at least as far south on the continent as Loanda, Angola.* Yours, BORYS

*As this goes to press, Borys is writing from Cape Town, where his African journey finally came to an end. The next report will be accompanied by a map of his entire route from the Mediterranean to the Cape.—EDITOR.

sufficiently flexible and eclectic, he may well take over from the economist as the intellectual bellwether—or, with bad luck, Judas goat—of the world."

Throughout the volume, Furnas quotes from the South Seas research of anthropologists on points he is discussing at the moment, but he says comparatively little anywhere directly of what anthropologists have or have not done thus far in the Pacific either as describers of the vanishing cultures and of those which are replacing them, or as "intellectual bellwethers," advisers or administrators alleviating South Seas trouble situations relating to natives. This lack of discussion by Furnas would not matter did he not raise the question of the ethnologist's role in the first chapter and devote the final chapter to "The Men from Mars." Admittedly not an anthropologist himself, Furnas appropriately remarks, "Here goes nothing," and then takes apart the anthropologists and their attitudes toward natives and native cultures in general. There is scarcely a reference in this chapter to the work of anthropologists in the Pacific. The rest of the book would lead one to expect here a review of the work of ethnologists in the specific area under discussion and an evaluation of their contributions or failures in that region, just as the author, presumably no missionary either, discusses the mission movement and its principles not anywhere and everywhere over the world but in the South Seas.

The book as a whole is packed with information relayed to the reader in hasty journalistic style, which is a curious concoction of sugar and vinegar which did not harden into butterscotch. The amount of vitriol slipped in may be the reason. Yet before one criticizes Mr. Furnas' criticism, it is essential, if one's life and occupation are in the Pacific, to face candidly whether the particular remarks one resents are on points on which one's own objectivity is not what it should be. Nevertheless, even when one agrees with the author's criticism on certain points, his mode of criticism by wisecracks and vituperation raises one's hackles in defense of the victims of his acid.

An unintentional bit of humor, which is fascinating, is the crediting of *Unwritten Literature* to *R. W.* Emerson, although the final bibliography gives Nathaniel B. his proper credit for the work. The initials R. W., however, immediately set one to wondering if R. W. would have meditated under the Waikiki banyans, if Thoreau would have fled to Niihau, if Margaret would have been less vehement and more sincere about "accepting the Universe" and if Louisa M. would have championed the German bandmaster who made hymns into hula tunes. The situation would have been no stranger than what did happen, and Furnas has well brought out both the charming and the depressing incongruities which actually did, and still do, exist in the South Seas.

Informative and readable as the book is, the serious student of South Seas problems will still turn with relief and renewed admiration to an earlier book also sponsored by the Institute of Pacific Relations, namely, Felix Keesing's, *South Seas in the Modern World*, for a temperate, well written, objective account which also mentions the romantic lure of the Pacific but without getting tangled up in it as if in flypaper. The older book does the IPR more credit than *Anatomy of Paradise* which it also sponsored.

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YOSEMITE, THE BIG TREES, AND THE HIGH SIERRA: A SELECTIVE BIBLIOGRAPHY. By Francis P. Farquhar. University of California Press, Berkeley and Los Angeles. 1948. xii + 104 pp. Illus. $7.50.

The love of books and the love of mountains go agreeably together. When the two meet in a man with the gifts of a Francis Farquhar, the result is books about mountains and books about books about mountains that are both enlightening and agreeable to read. To cap it, when such books are printed at this Press, they grace any library.

Let no one in pursuit of *reading* shy at the word "Bibliography." Author of *Place Names of the High Sierra*, twice president of the Sierra Club, at home on the peaks

or on the Colorado in a small boat, Francis Farquhar is not the man to write a dull book. It is obvious that even the compilation of a bibliography became adventure to him—he gives himself away in his Preface: "But as the work progressed it seemed desirable to supplement the bibliographical descriptions with notes on the origin of the respective books and pamphlets and to expand the work still further by comments on significant portions of their contents. This led . . ." etc.! An adventurous man just *has* to see what's around the next bend.

What this "principal historian of the nation's greatest mountain range" who "combines a mountaineer's ability to find a route up a cliff with a historian's ability to track down a fact" started with was 25 important titles from his own "most complete private library on the mountain and other scenic regions of the Far West." First is the 1839 *Narrative of the Adventures of Zenas Leonard;* last is *Reports* of the Superintendents of Sequoia National Park, 1891-1915. In between are such classics as King's *Mountaineering in the Sierra Nevada* and Hutchings' *Scenes of Wonder and Curiosity in California.* Many items are rare or little-known. What the bibliographer wound up with is a mine of fact and anecdote about those who wrote these pieces and how they came to write them. This reviewer's most delightful discovery was the completely deadpan Japanese *Conquest of Mount Whitney* by Shuki Nakamura, Tokio, 1931. With his presentation copy Mr. Nakamura kindly supplied Mr. Farquhar with an English summary of the contents. One example does it here: "Conquest of Summit:—First Japanese ascent, view on top. Alpinism, Divide of Oriental and occidental civilization, American exclusion of oriental people, great stage of the Pacific era, resolution of Japanese . . ."

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THE WISE ONE. By Frank Conibear and J. L. Blundell. Illustrated by Michael Bevans. William Sloane Associates, Inc., New York. 1949. 265 pp. $2.75.

This is the life story of a black beaver of the Northwest woods. It is told simply, sympathetically, and authentically, by one—the senior author—who has spent more than thirty years of his life as trapper, woodsman, and voyageur in the Canadian Northwest. He knows wildlife. He is an intimate of beavers. He writes with the gift of a true storyteller.

This is the kind of nature writing that Sally Carrighar has done so successfully in *One Day on Beetle Rock* and *One Day at Teton Marsh.* It may well be the hardest kind of nature writing there is. You must somehow get inside your animal subject's pelt and see through his eyes, yet you must see the whole context of his existence whereas he knows but the thin band of the present moment, granting what we may to memory and instinct. Mr. Conibear can enter the life of his Young Black One, grow with him into the Big Black One and, finally, the Wise One, and never trip the deadfall of transferred human emotions and values.

Just as a story, this is top-notch. The Black One explores his world, finds his mate, establishes his home, raises his young, outwits Indian trappers, fights it out with savage little otters, and lives to his lonely end. If you are eight or eighty, if you want to know the natural history of beavers or thrill to adventure, this is your book.

A CONCISE ENCYCLOPEDIA OF WORLD TIMBERS. By F. H. Titmuss. Philosophical Library, New York. 1949. vi + 156 pp. $4.75.

This is described on the title page as "A useful work of reference for all users of timber containing detailed descriptions of nearly 200 different timbers, with macroscopic identifications of the woods in more common use." It was designed, in the author's words, "to serve as a connecting link between the laboratory worker and the man in the workshop and to be a handy reference book for all whose work necessitates a real understanding of timber." An Introduction deals with "The Structure of Wood, its Identification, and Some Essential Definitions." The text consists of "Description and Identification" of the timbers in alphabetical order by their most commonly used trade names, from "Acacia" to "Zebrawood," with botanical names given in the text. The Index lists only botanical and "alternative trade or local names." Thus the text (e.g.) has "Rosewood, Indian," the entry ending with the sentence: "Indian Rosewood is the timber of *Dalbergia latifolia,* and may be sold under the title of "Bombay Blackwood." Only the latter two names will be found in the index.

Even an "Encyclopedia" has to stop somewhere—a western American might miss his sugar pine in this British book (English publisher, The Technical Press Ltd.), but he will learn about many interesting woods he knows vaguely or not at all. There are no illustrations.

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TRUE BEAR STORIES. By Joaquin Miller, with an Introduction by Dr. David Starr Jordan. Binfords & Mort, Portland. 1949. 229 pp., illus. $2.50.

"The bear is the most human of all beasts . . . in his temper and way of doing things and in the vicissitudes of his life. . . . In this book Joaquin Miller has tried to show us the bear as he is, not the traditional bear of the storybooks." Thus Dr. Jordan in his introduction which, it may be presumed, gives a stamp of authenticity to a book that might be expected to suffer somewhat on account of its author's current status as a minor poet. An interesting feature is Dr. Jordan's inclusion of C. Hart Merriam's table of "not less than ten species of bear in the limits of the United States and Alaska."

First published in 1900, with a dedication to the author's "little daughter," the book is addressed primarily to youngsters. Whether bears can outbid supersonic jet fighters in the satisfaction of a (current model) boy's need for excitement in his reading, cannot be answered here. Nor will it matter to a boy, but only to an editor who has the strongest possible interest in the growth of Western publishing, that this present edition—like so much of the regional output except that of the university presses—has suffered at the hands of the manufacturer. (The old cry of "subsidy!" will be raised at the foregoing comparison; but one observer, at least, feels very strongly that our several Western trade publishers would find it good business to aim, and produce, at just the everyday Eastern standard—if higher is indeed uneconomic. This matter is admittedly dragged in here, to prick the boil of accumulated grief over the mediocre to downright shoddy examples of book-making that come to this desk from certain Pacific Coast and other Western publishing houses. The boil hurts.) D.G.K.

# Index to Volume II

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*ERRATA* in the July-August 1949 issue:

Page 22. *For* ceteceans *read* cetaceans.
Page 23. *For* Iloran *read* Ilorin.
Page 30. *For* D. Forde Scott *read* Daryll Forde.

*PD* apologizes to Professor Forde and Professor Scott. We failed to make a complete check of an improperly interpreted citation in the original MS.

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**The CALIFORNIA ACADEMY OF SCIENCES wants a symbol for its letterheads, publications, and other uses.**

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1. The contest is open to everyone, including members of the Academy, employees, and their families. Contestants may submit more than one design.

2. The contest will open January 1, 1950 and close February 14, 1950. All entries must be in the hands of the CONTEST COMMITTEE on or before that date or postmarked not later than midnight of closing date. The contest is subject to Federal and State regulations.

3. Entries should be sent to CONTEST COMMITTEE, California Academy of Sciences, Golden Gate Park, San Francisco 18, California. No entries will be returned and no correspondence entered into. Winners will be announced March 1, 1950 and prizes mailed on that date. All contestants will be notified. Duplicate prizes will be awarded in case of ties.

4. Entries should consist of a sketch or draft of a design for a seal for the California Academy of Sciences. They may be accompanied by explanation or argument, if desired, but such must not be necessary for comprehension of the design. Drawings may be any size but must be suitable for reduction to 1½" overall. Drawings should be in black and white only. Professional art work is not necessary as long as the entry is neat and clear. The design must incorporate the words CALIFORNIA ACADEMY OF SCIENCES. It may include a motto or inscription suggested by the contestant.

5. Entries should be marked on the reverse side only with the name and address of the contestant or, if desired, this may be included in a sealed envelope, securely fastened to the reverse side of the design. The judges will not know the identity of the contestants in selecting the winning designs.

6. All designs submitted become the property of the California Academy of Sciences. The Academy is not obliged to use any design submitted. Contestants accept the rules of the contest when they enter. No designs will be returned.

7. Entries will be judged on appropriateness of the symbol, its uniqueness, and suitability for use by the Academy. Decisions of the judges will be final. The CONTEST COMMITTEE of five members is appointed by the Council of the Academy.

8. First prize, $100; Second prize, $50; and Third prize, $25. Nine additional prizes will be awarded consisting of a year's subscription each to PACIFIC DISCOVERY, or in case the winner is already a subscriber, $3 in cash.

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